

HPC For You



JAWS
PANKRATION
2021

Up till Down

Hiroshi Kobayashi



Who Am I

```
{  
  "Name": "Hiroshi Kobayashi",  
  "Organization": [  
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  "Favorite services": [  
    "AWSCLI",  
    "Batch",  
    "ParallelCluster"  
  ],  
  "Award": "AWS Samurai 2017",  
  "Presentation": "re:Invent 2017-2019"  
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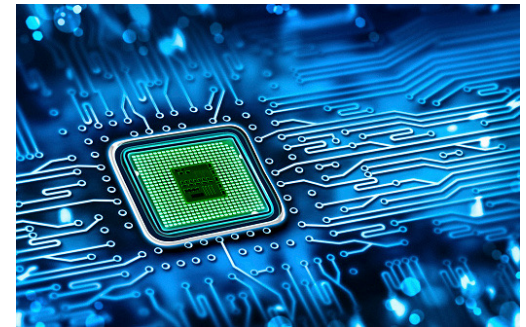
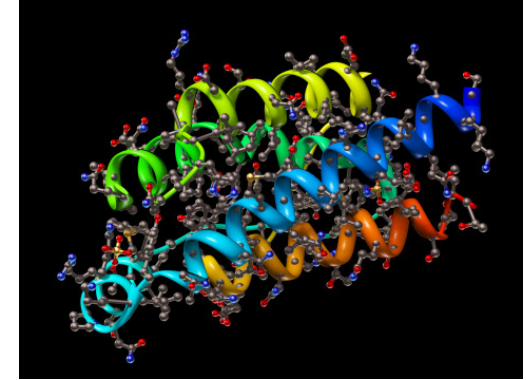
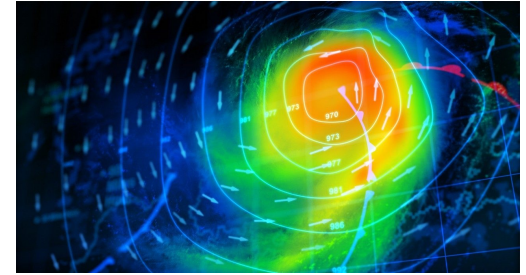


[CMP402 Setting up and optimizing your HPC cluster on AWS@re:Invent2019](#)



What is HPC?

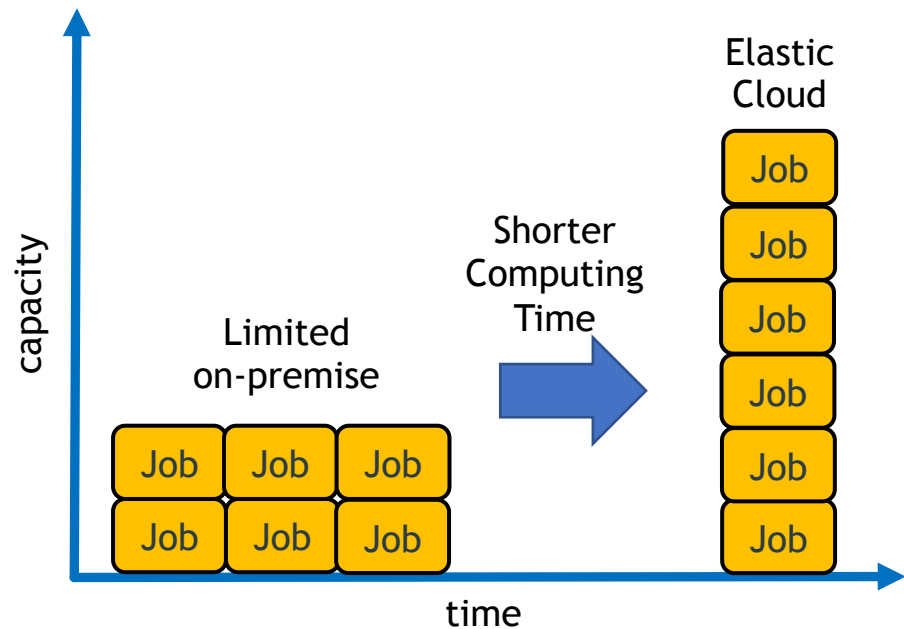
- HPC → High Performance Computing
 - HPC generally refers to the practice of aggregating computing power in a way that delivers much higher performance than a typical computer in order to solve large scale problems.
- Use Cases
 - Weather Forecasting
 - Computational Fluid Dynamics (CFD)
 - Drug Discovery
 - Chip Design Simulation (EDA)
 - AI & Machine Learning



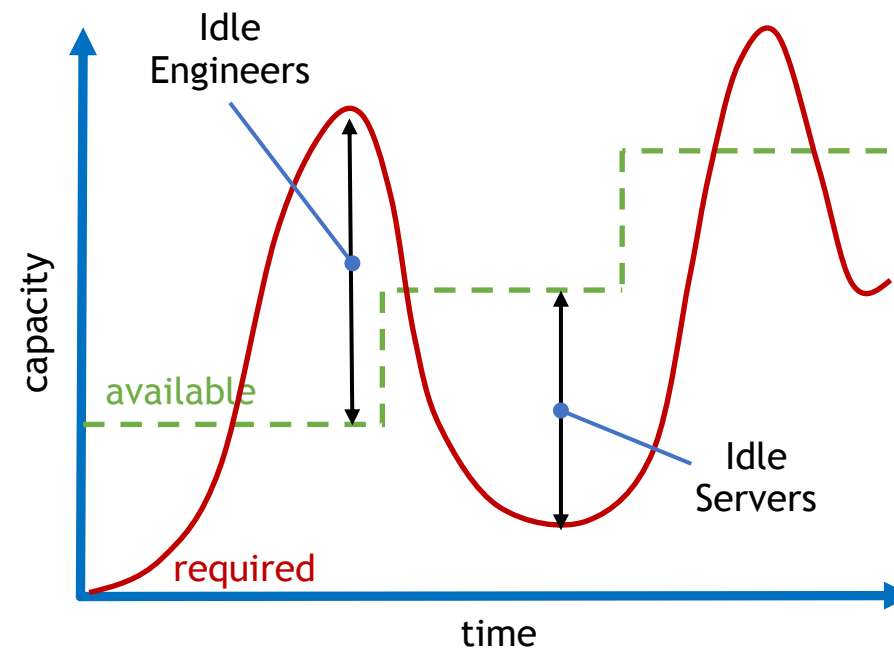


Benefit of Cloud HPC

Time to Market



ROI

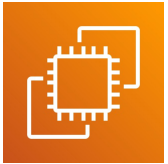


KPI = Throughput per cost



HPC for You

- Not all workloads are same, each computing have each characteristics
- ~~Share one big (on-premise) cluster~~
 - Optimize your cluster and continue it on AWS



Amazon EC2



AWS ParallelCluster



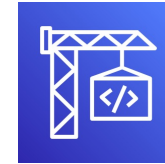
NICE DCV



AWS Batch



Elastic Fabric Adapter



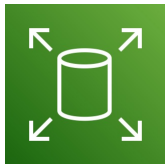
AWS CodeBuild



AWS CodePipeline



Amazon S3



Amazon EBS



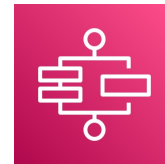
Amazon EFS



Amazon FSx
for Lustre



AWS Backup



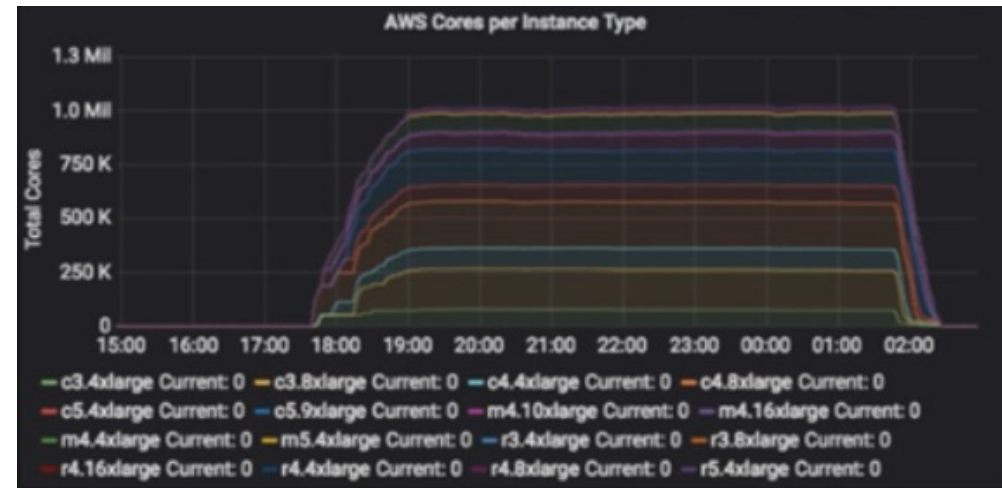
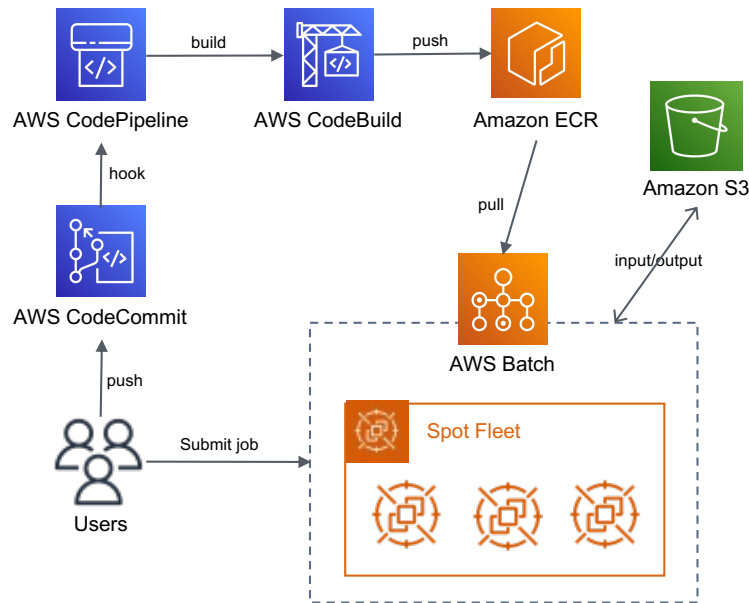
AWS
Step Functions



Amazon
SageMaker

1 Million Core Computing

- 2.5million parameter study on 1 million core cluster
- Shrink simulation time from 20days to 8 hours





Next Horizon of Cloud HPC

- Simulation x Machine Learning
 - (If the model was verified) the cost of ML predication is much lower than Simulation
 - ML need data and Simulation can provide data
 - <https://matlantis.com/en/product/#technology>
- AWS Batch x Step Function x SageMaker
 - Step Function enable combine Simulation and ML